

## JR. VOTE CARD

Do we build a hydropower dam on the Lute River?

**Hydropower:** Moving water has been used as a source of energy for thousands of years. Hydroelectric plants generate electricity by using falling water to turn turbines. Hydroelectric dams store water in a reservoir. Water is a **renewable resource**.

**Fact:** A hydroelectric plant will **improve air quality** on Argyle by **reducing** the use of *fossil fuels* for energy.

**Fact:** The dam will **flood** out the town of Glenn, displace 8000 residents, destroy some of the habitat for the endangered Argyle Wooly Cat and block passages for fish stocks.

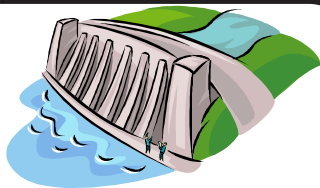


**Fact:** Hydro requires 20 times more land area than solar power.

**Energy Production:** 25 megawatts of **electrical power**.

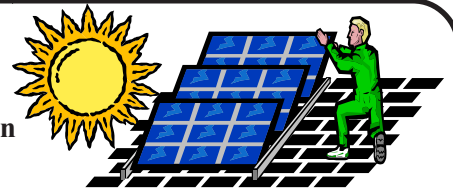


Discuss this issue for 5-10 minutes, then vote YES or NO.  
Do not look at the back of the card until *after* the vote.



## JR. VOTE CARD

Do we finance a 4000-rooftop solar electricity generation program?



**Solar Electricity:** Energy from the sun is converted to electricity by photovoltaic (PV) panels made from purified silicon chips. The sun is a **renewable resource**.



**Fact:** Solar electricity emits **no air pollutants** or greenhouse gases;



**Fact:** However, *making* PV panels requires some use of some **hazardous chemicals** and **non-renewable resources**.



**Fact:** PV panels will be placed on existing rooftops, requiring no additional land usage.

**Energy Production:**

16 megawatts of **electrical power**

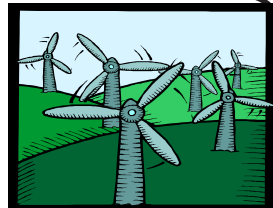


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## JR. VOTE CARD

Do we build a 600-machine wind farm on Argyle's mountains?

**Wind Power:** Wind machines use turning blades to collect the wind's energy. Blades connect to a drive shaft that turns a generator to make electricity. The Argyle mountain tops have wind conditions favorable for a wind farm location. Wind is a **renewable resource**.



**Fact:** Wind machines cause **no air or water pollution** and produce no greenhouse gases.



**Fact:** **Birds** can be killed or injured by wind machine turbines;



**Fact:** Some people find wind farms are unattractive and noisy. They feel that a **vista or view** of the mountains with wind turbines is not desirable.

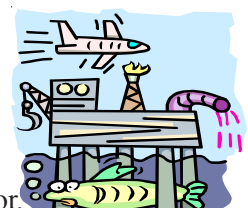


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## JR. VOTE CARD

Do we drill for oil in the Wiggly Ocean?

**Oil:** Oil is found by drilling wells beneath the ground or the ocean floor. We use oil to make gasoline and many consumer products, including plastics. Oil is a **non-renewable resource**.



**Fact:** When burned, oil creates **air pollution** that can harm humans and most other life forms and adds to global climate change.



**Fact:** An **oil spill** could damage the marine environment, killing plants and animals.



**Environmental Costs:** Potential spill cleanup; **health problems**; transportation; refining.



**Energy Production:** Enough oil lies off the south coast to provide Argyle with 5 years' worth of gasoline.

Discuss this issue for 5-10 minutes, then vote YES or NO.  
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### JR. VOTE CARD

Do we invest in conserving energy by insulating Argylian homes?



**Energy Conservation:** Conservation means reducing energy use by installing insulation, replacing old windows, hanging thermal curtains and lowering thermostats, etc.

**Fact:** Conservation cuts the need for energy which **prevents air pollution**.

People *use less* energy to **heat** and provide **electricity** to their homes.



**Fact:** Energy conservation requires **up-front costs** that can be expensive but can **save money** over time.

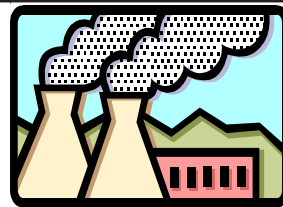


**Energy Production:** If we reduce energy consumption by 20% through conservation, we could provide enough energy to power an additional 80,000 homes on Argyle with no increase in air pollution.

Discuss this issue for 5-10 minutes, then vote YES or NO.  
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### JR. VOTE CARD

Do we build a nuclear power plant at Figtown?



**Nuclear Power:** Nuclear power plants use heat from atomic reactions to run steam generators, which make electricity. Nuclear fuels like uranium and plutonium are **non-renewable (fossil fuel) resources**.



**Fact:** Nuclear power plants do not produce **air pollution** or any greenhouse gases.



**Fact:** **Radioactive** nuclear fuel is dangerous and must be disposed of in special sites. Fallout from a meltdown would devastate Argyle, causing many cancers and radiation health effects on the population.



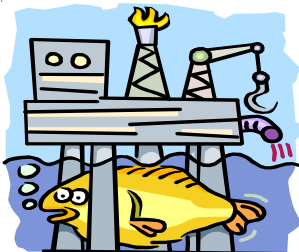
**Energy Production:** 600 megawatts of **electrical power**



Discuss this issue for 5-10 minutes, then vote YES or NO.  
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### JR. VOTE CARD

Do we drill for natural gas in the Wiggly Ocean and build a pipeline?



**Natural Gas** is found by drilling beneath the ground or the ocean floor. Near the Bing Islands there are large deposits of natural gas. Natural gas is a **non-renewable (fossil fuel) resource**.



**Fact:** Natural gas emits **less air pollution** and less carbon dioxide than coal and oil.



**Fact:** Building a **pipeline** from the east coast to Figtown would cut a 75-foot wide swath through Wildwoods National Park and nearby woods and farmland.



**Energy Production:** Enough natural gas exists in offshore reserves to **heat homes** and power factories on Argyle for 15-25 years.



Discuss this issue for 5-10 minutes, then vote YES or NO.  
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### ROLE CARD

Each team member can play one (or more than one if the team has fewer than four players) of the following roles:



#### The FACILITATOR will:

play the role of "Chair", ensuring every one participates and is treated fairly and with respect.

- make sure everyone is doing his/her job.
- conducts the vote and reads the status reports.
- leads the group presentation at games end.

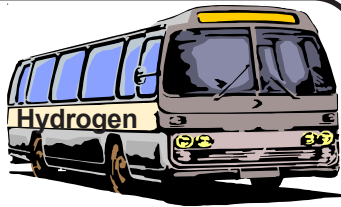


#### The RECORDER will:

- Record each voting issue and the reasons for or against the issue
- record the result of the vote on the Record card.

### JR. VOTE CARD

Do we add hydrogen fuel cell buses to the public bus system?



**Fuel cells** produce electricity using hydrogen. **Hydrogen from water** is a **renewable resource**.



**Fact:** Fuel-cell vehicles emit **no air pollution** and no greenhouse gases. The only by-product is water vapor.



**Land & Wildlife:** Use of hydrogen reduces the need for oil drilling and the effects of oil spills on land and wildlife.

**Energy Production:** Hydrogen fuel-cell powered buses are more efficient than diesel powered buses.

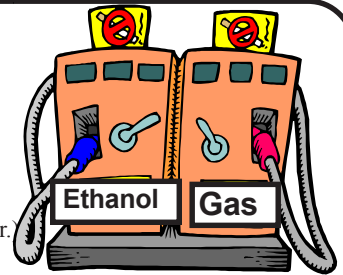
Discuss this issue for 5-10 minutes,  
then vote YES or NO.

Do not turn over this card until *after* the vote.

### JR. VOTE CARD

Do we convert half our gasoline pumps to ethanol?

(Note: If you already converted to electric vehicles, you may discard this vote card and select another.)



**Ethanol** is a **biofuel** produced through the fermentation of corn, wheat or sugar cane, all **renewable resources**.



**Pollution:** Ethanol-powered vehicles produce **less** of certain kinds of **air pollution** than gas, but may increase other kinds.

**Facts:** Growing ethanol crops creates pollution with the use of **fertilizers and farm machinery**.



**Energy Production:** Argyle can produce enough ethanol to **fuel** half of the cars on the island.



Discuss this issue for 5-10 minutes,  
then vote YES or NO.

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### JR. VOTE CARD

Do we use passive solar design in the new Bunk City Hall?



**Passive solar design** uses southern orientation (in the northern hemisphere), south-facing windows and overhangs, heat absorbing material, and insulation to capture and store the sun's heat, a **renewable resource**.



**Fact:** Passive solar reduces use of **air polluting** and greenhouse gas emitting heat sources.



**Fact:** A passive solar design requires sites with southern orientation - facing the sun, but no additional land area.



**Fact:** **Cloudy days** can affect how well it works.

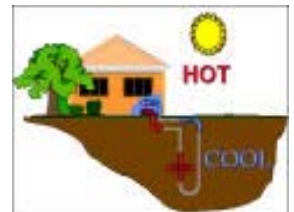
**Fact:** Passive solar design can save up to 40% of **heating** energy needs and costs.



Discuss this issue for 5-10 minutes, then vote YES or NO.  
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### JR. VOTE CARD

Do we install geothermal air-source heat pumps (GHPs) in 4000 homes and businesses?



**Geothermal Heat Pumps** use a loop of plastic pipe filled with water and antifreeze and placed over 100 feet deep to transfer normal groundwater temperatures for winter heating, summer cooling and hot water heating. Ground heat is a **renewable resource**.



**Fact:** GHPs emit no **air pollution** and no greenhouse gases; there is no contact between the antifreeze solution and the groundwater.



**Fact:** GHPs take up the space of a normal **heating** furnace.

**Energy Production:** This does require electricity to pump the fluid through the pipes. *But saves* fuel costs compared to a house and hot water heated by oil, gas or electricity.



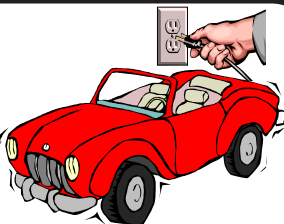
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## JR. VOTE CARD

Do we convert all of Argyle's vehicles (80,000)

to electric power? (Note: If you've already converted to ethanol, you may discard this vote card and select another.)



**Electric Vehicles (EVs)** get their power from batteries, rather than an internal combustion engine (ICE). The batteries must be charged by an existing electricity source.

**Fact:** EV's emit **no air pollutants** or greenhouse gases directly, but they may be charged by a polluting electricity source.

**Fact:** Argyle would have to build **EV charging stations**, or convert gas stations to charging stations.

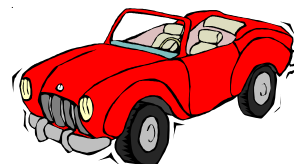


**Energy Production:** Electric vehicles (EV's) get over twice the mileage of internal combustion engines from an equivalent amount of energy.

Discuss this issue for 5-10 minutes, then vote YES or NO.  
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## JR. VOTE CARD

Should Argyle provide a tax refund to consumers who purchase gasoline-electric hybrid vehicles in the next year?



**Hybrid Vehicles** get their power from two sources: a gas engine and an electric motor that work together. Hybrids use less gasoline. This **reduces air pollution** and conserves gasoline.



**Fact:** Hybrid vehicles use gas, a **non-renewable resource**. These special large batteries are charged as the vehicle is run and do not need to be plugged in.



**Fact:** The small hybrid cars are made of lightweight materials and are more aerodynamically-designed.



**Fact:** Disposal of the large battery could create an environmental problem.

Discuss this issue for 5-10 minutes, then vote YES or NO.  
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## JR. VOTE CARD

Do we create a free bicycle "library" loan system where people can check out a bike for extended periods of time?

**Energy Production:** Bikes are people powered so the energy used is all food. The bicycle is the most efficient vehicle yet built and riding can also contribute to a healthy lifestyle.



**Energy Source:** Food for people power is a **renewable resource**, and can be grown locally.



**Fact:** Bicycles can help **reduce air pollution** when used to replace a car trip.



**Fact:** You **avoid the need to add parking spaces** that create rain drainage problems and water quality pollution.



**Hidden Costs:** Rental bikes often need to be repaired or replaced. **Bike accidents** are common and could increase.

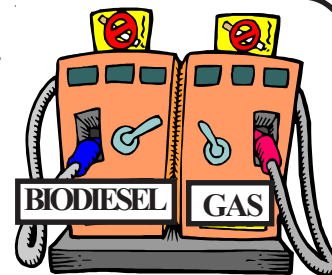


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## JR. VOTE CARD

Should Argyle fuel its municipal fleets with biodiesel?

**Energy Source:** Biodiesel is a renewable fuel made from vegetable oil or animal fats that can be grown on farms in Argyle.



**Fact:** Biodiesel is a **renewable resource**. When used in cars and home oil furnaces, it emits **less global warming air pollutants** than petroleum diesel fuel.



**Fact:** Biodiesel is biodegradable and non-toxic. Growing the crops uses **farm machinery and fertilizer** made from fossil fuels (oil).



**Fact:** It requires separate storage and fueling tank **systems to collect, purify, store, and distribute** biodiesel in Argyle.



Discuss this issue for 5-10 minutes, then vote YES or NO.  
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